

FINAL MINUTES

28th Meeting of the NECC
January 11-12,2000
Holiday Inn - Moline, IL

by

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Navigation Environmental Coordination Committee (NECC)

January 11-12, 2000

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1. WELCOME AND APPROVAL OF MINUTES OF LAST MEETING

The 28th meeting of the Upper Mississippi River-Illinois Waterway System Navigation Study Navigation Environmental Coordination Committee (NECC) was called to order by Ken Barr, Chairman. An attendance list is provided as **Attachment 1**. Corrections to the minutes were offered by Gretchen Benjamin and Dan Wilcox, these changes have been made to the 27th NECC minutes.

Bernie Schonhoff: inquired as to the decision to remove Bowfin from the fish model summary evaluation (page 10 of 27th NECC minutes), didn't remember this discussion and wanted clarification how the decision was reached.

Tom Keevin: responded, indicating that Bowfin were brooders, protecting their young in nests, therefore they were unlikely to be part of the larval drift in the main channel. Subsequently, the model estimates for larval Bowfin entrainment were questionable.

Dan Wilcox: Throughout the mitigation process need to evaluate the model results on a species by species basis.

Tom Pullen: We (Corps) need to do a better job providing clarification and justification on why certain actions were taken.

Ken Barr: The mitigation package does not capture all the discussions and decisions that went into the formulation of this document most of that information was provided in the October Summary Package and was not duplicated here. page 3, page 7 Gretchen reset model results back to 0 after each year modify statement, Dan Wilcox will provide comments on plants. Commercial fish pg 10 throwing out of Bowfin clarify why this was done, Discussion led by Keevin, Wilcox we need to evaluate the model results by a species by species basis. Pullen we need better clarification on why we did certain actions, Barr this package does not capture all the discussion that went into the formulation of this document much was provided in the October Summary Package that was not duplicated here.

2. STUDY STATUS - KEN BARR

Ken reviewed the Powerpoint Presentation that was presented at the November GLC meeting. Ken's presentation is provided as **Attachment 2**.

Questions/Comments:

SLIDE 3: REMAINING MEASURES

Jon Duyvejonck: Asked when a full array of alternatives and a recommended plan would be available, for purposes of the Coordination Act Report (CAR).

Ken Barr: Essentially you have already seen the array of alternatives, Alternatives B, E, F, and J. Alternative H or H' have been dropped completely. A draft recommended NED plan will be presented to the GLC in mid February.

SLIDE 4: EXTENSION OF GUIDEWALLS

Ken Brummett: Is the time reduction for guidewalls presented as an average?

Brad Thompson: Yes it is an average value. The actual time savings for each individual site can be found in the Detailed Assessment of Small Scale Measures report (Dec 1998) page 4-98, this report was distributed in January 1999 and is posted on our web page. Individual savings at most locks only vary a small amount from the average numbers.

SLIDE 5: ADJACENT MOORINGS

Bill Bertrand – Concerned about the mooring cell location for L&D 12 due to impacts to a very important fishery, we need to carefully consider these locations more closely.

Ken Barr: At this point we are considering several possible locations at each site, no definite plans have been made. It is our desire to select the most environmentally acceptable location for a mooring cell. We would consider impacts to the fishery, terrestrial vegetation, mussel beds, etc. Your input in selecting such areas will be critical. From the towboat captain's standpoint, they would prefer a site less than one mile from the lock.

SLIDE 9: INPUT CHANGES SINCE WORKSHOPS (AUG 1999)

Discussion of the removal of Alternative H and H' and inclusion of Alternative J.

Jon Duyvejonck: Does Alternative J include a build ASAP or an optimized schedule.

Ken Barr: The alternative will be evaluated using both options.

Bill Bertrand: Are the 1200' chambers on the IWW being built landward of the existing locks?

Ken Barr: Yes, due to year round navigation it was more cost effective to build landward than to shut down the 600' chamber for construction. The existing chamber is being considered for use to lock pleasure craft in the future.

Jeff Stein: What are the reasons for the major decrease in engineering costs?

Dave Tipple: Reduction in engineering costs included eliminating wherever possible approach channel improvements (adding dike fields, shaping banks, etc.), which had been included in the earlier lock costs. Economics evaluations indicated that these channel approach improvements were not economically justified based on system efficiency.

Other changes reducing cost included, moving to lower cost construction methods, reduced depth, shorter guidewalls, etc. Another change was to reduce the contingencies, due to increasing Corps experience with these methods.

SLIDE 10: MAJOR REHABILITATION - (see Attachment 3 for detailed cost summary)

Gretchen Benjamin: Why the difference in rehab costs from one location to the next? Those conducted in MVP were considerably less, around 2 million dollars.

Brad Thompson: The timing and amount of work required for a rehab can vary from one location to the next. This varies based on the existing condition of the lock, how much time has passed since the previous rehab, and number of operations at the lock. We will provide additional specifics in the minutes regarding assumptions used in developing the cost estimates for the Nav Study and verify the actual cost of rehabs in MVP (**Attachment 3**).

Mark Beorkrem: I fail to see the cost savings, the rehab costs are merely being encountered sooner in the WOP condition.

Dave Tipple: The cost of rehabing the existing lock as part of extending the lock has been in our estimates since the very beginning, the 120 million currently proposed as the construction cost of lock extension includes the major rehab costs for the existing 600 ft lock. It was an oversight that the benefits of including these costs associated with doing rehab during the lock extension were not included earlier in the process.

Ken Brummett: Will you still have these rehab cost in the WOP condition?

Ken Barr: Yes, refer to Slide 11 showing rehab costs and schedule.

Rick Moore: Why does this rehab cycle cost suddenly come into the equation, and why wasn't it considered from the very beginning?

Dave Tipple: The cost of rehab has been in our estimates since the very beginning, the 120 million currently proposed as the construction cost of lock extension does include the major rehab costs for the existing 600 ft lock. The cost savings associated with doing rehab during the lock extension

Gretchen Benjamin: The primary cost for the MVP rehab was the construction of the new lock houses, at approximately were \$6 million (L&D 10). This is far removed from the rehab benefits being claimed by the Nav Study.

Ken Barr: We will provide an itemized cost of actual rehab costs for the lock and dams that were recently completed (See **Attachment 3**).

Lori Walters: How were environmental costs determined for the site specific impacts at the upper sites, when HEP was not done?

Rich Fristik: We extrapolated from lower sites to the upper sites .

SLIDES 17-20: REVIEW OF NET BENEFITS SPREADSHEET

Mark Beorkrem: What has happened to Alternative J since this was presented to the GLC last Fall?

Ken Barr: Modification to Alternative J called for existing lock chambers to remain at the IWW dams, building the new 1200' chamber on the landward side., allowing the existing 600 ft lock to remain open for traffic during construction. A ten-lock alternative with mooring facilities was also brought up at the November GLC, this plan is currently under evaluation and will be discussed at the February GLC.

Jeff Stein: The June 1999 newsletter shows values that are lower than being presented today. Why the discrepancy?

Ken Barr: The difference between the June 1999 annual net benefits and those presented at the November GLC can be attributed to the introduction of rehab savings, decreasing contingency costs from 35% to 25%, and mooring cells were added to some of the Alternatives.

Rick Moore: Is the Corps getting to a point where the numbers will remain the same from one meeting to the next?

Ken Barr: We continue to be in the plan formulation phase of this project until the final report to Congress in December 2000. We do not anticipate these numbers changing dramatically from now until that date, however I can not rule out further refinement.

Mark Beorkrem: Can you provide me with a detailed plan for the location of Peoria Lock?

Dave Tipple: I would be glad to discuss the details of that plan with you at the upcoming meeting you requested with our engineers.

Bertrand: How will the continued operation of the 600' Lock at IWW sites affect the traffic?

Doug Blodgett: Two locks at one location will have higher operation costs.

Ken Barr: The 600' lock will primarily be used for locking recreational traffic while the new 1200' lock will be used only for commercial traffic. It is likely that this will cut down on delays for both recreational and commercial traffic, thereby providing additional benefits that could offset additional operation costs. There would also be a redundancy value for planned and unplanned closures.

Rick Nelson: How can you work around the I-474 bridge in Peoria?

Dave Tipple: It will be a tight fit. (In discussion during the break, Dave Tipple let Rick Nelson know that Corps engineering staff met with Illinois DOT engineering staff in Nov 99 to discuss engineering details and costs for Peoria and La Grange. This dialogue will continue into the future, as necessary.)

SLIDES 17-20: BUILD ASAP -VS- OPTIMAL SCHEDULE

Alt. E comes out with the most net benefits under the build ASAP

Alt. J comes out with the most net benefits under the optimized schedule

SLIDES 25-26: SENSITIVITY ANALYSIS

Jeff Stein: The volatility in the traffic levels during the 1980's suggest a leveling off of traffic growth. How is it that your predictions are more in line with the 1960's growth than the more recent data?

Dave Tipple: This graph reflects the projected traffic levels in an unconstrained system, and since the actual system will always have some constraints the forecasts shown on the graph are higher than traffic which will result from improvements. These projections were developed by independent contractors who separately assessed the specific trends in shipments of the eight major commodities, of which roughly 60% is attributable to agricultural commodities. Due to the limitations of forecasting, no attempt was made to incorporate year to year volatility, which is due to the effects of existing constraints as well as natural events. For example, notice the substantial drops in traffic corresponding to the drought of 1988 and the flood of 1993.

Group: Considerable discussion on how the Faucett line was derived, agricultural assumptions and production. What is the purpose of this graph, how does it factor into the economic analysis?

Dave Tipple: The traffic forecasts are an input to the economic modeling. They play a role along with lock performance, elasticity of demand, and other factors in determining the actual traffic levels predicted by the system economic models (as stated earlier, anticipated traffic from model runs will be lower than the unconstrained forecasts). The assumptions regarding various commodities was based on the best available information at the time the forecasts were put together. Given the large uncertainties over 50 years, short-term deviations do not demonstrate the projections are overall, accurate or inaccurate. In response to the specific comment that assumptions over future crop acreage is the driver for future agriculture exports, a review of the forecasts shows that yield assumptions represent a greater contribution to production increases.

SLIDES 39-50: SYSTEM TRAFFIC PROJECTIONS

Dave Tipple: We need to emphasize that the proposed improvements on the IWW would primarily increase the efficiency of the without-project traffic, the improvements on the IWW would not cause much of an increase in traffic.

Gretchen Benjamin: It is sounding like the Corps has already selected Alt. J, I would like Alternative B to get the same amount of attention as a viable alternative. It is the most environmentally compatible.

Ken Barr: It is important to remember that the net economic benefits you have seen to date have not included the environmental costs. Environmental costs of the various alternatives will detract from the overall net economic benefits. Obviously, the environmental costs of J are likely to be higher than B. Before the February GLC we will be submitting the Environmental costs to Rich Manguno (Corps Economist) who will include the costs in the overall analysis to compute the annual benefits that will be evaluated to select the NED and recommended plan.

3. ADAPTIVE MITIGATION APPROACH – RICH FRISTIK

Ken Barr: Stated that flexibility is necessary to consider a wide variety of measures and options for locating these actions and an opportunity to evaluate the success or failure. Reinforced the adaptive approach being proposed, the need for incremental analysis, and the challenges to identify how a specific mitigation action will provide desired resource outputs. Finally, we need to consider alternative coordination frameworks to pick up these issues and continue into the next phase of implementation.. One alternative would be to retain the current organizational structure (e.g. continuation of the NECC and GLC).

Tom Pullen: A lot of work is still needed in order to get this mitigation plan to move forward to division and headquarters if we hope to get their buy-in.

Rick Nelson: Has division already had discussions with headquarters?

Ken Barr: Yes, initial discussions were held at a meeting this past November.

Tom Pullen: We are really breaking new ground with this whole endeavor.

Rich Fristik: Continued by reviewing the history and background of mitigation planning for the Navigation Study. Reviewed information on Council of Environmental Quality (CEQ) and Corps policy regarding mitigation, as well as the Fish and Wildlife Service mitigation policy:

Corps Guidance

- Planning Guidance Notebook, Chapters 4 and 7, provide detailed guidance on alternatives analysis, incremental cost analysis, definition of mitigation planning objectives, cost sharing, monitoring, etc.
- Separate EC on Incremental Cost Analysis for Mitigation Planning contains additional information on resource categorization, assignment of values and significance, and defining outputs of plan increments

NEPA - CEQ Implementing Regs.

- Alternatives evaluation and identification of impacts should include appropriate mitigation measures.
- Monitoring and enforcement programs where applicable for any mitigation.
- Defines the mitigation 'hierarchy':
 - Avoid
 - Minimize
 - Rectify
 - Reduce or eliminate over time

- Compensate

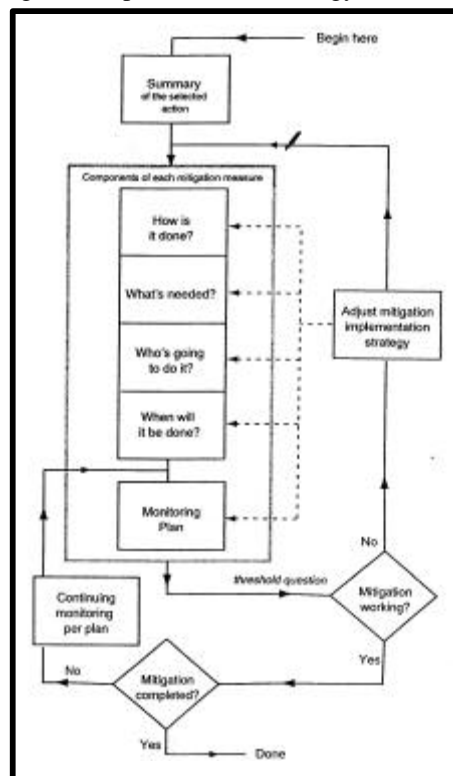
FWS Mitigation Policy

- Aim for recommendations to be complementary to FWCA and NEPA.
- Primary focus on mitigation of losses of habitat value.
- Policy acts to minimize project impacts, not reverse them.
- Service will make resource category determinations early in the mitigation planning process.
- Net biological impact = difference in predicted conditions between future with and without action.

In short, considerable guidance exists for Corps mitigation planning, and the agency is seeking the continued assistance and coordination of the state/federal agencies and NGO's in meeting this guidance. Embedded in the Corps guidance are requirements for incremental or cost-effectiveness analysis, and in this regard, a new tool developed by the Corps' Waterways Experiment Station is being investigated for potential use. This is the Integrated Bio-Economic Planning System (IBEPS), which combines a habitat evaluation module (HEP), a spatial analysis module and an economic analysis module. This may be a good tool in that it can integrate large amounts of data over wide geographic areas.

Echoed Ken Barr's remarks in terms of the need for flexibility and the ability to consider changed environmental or other conditions as mitigation planning is conducted. Emphasized that adaptive mitigation is not a perpetual monitoring or research and development program, or studies ad infinitum. The essence is to monitor the effectiveness of mitigation measures and make changes to make it more effective. Displayed a flow chart to illustrate this concept (Exhibit 1).

EXHIBIT 1. Components of a Mitigation Implementation Strategy.



Ken Barr: Noted that we will have to make a decision and recommendation to Congress along with that we will acknowledge the limitations of our assumptions and recommendation on how to get at this additional information to make a more informed decision. Gave example of the main channel adult fish entrainment uncertainties and our proposal to address them during the current fiscal year.

Rick Moore: Are Operation and maintenance cost included?

Ken Barr: Most of the measures and alternatives presented include operation and maintenance costs.

Jon Duyvejonck: What are the Program management costs in terms of design and administrative costs?

Brad Thompson: 10% for engineering design, 10% for construction management, and 25% contingencies

Dan Wilcox: Costs use in preliminary mitigation package are currently being given by past HREP projects

Rick Nelson: Expressed concern that a \$100 M mitigation strategy would be eaten up by administrative overheads and coordination time instead of actually mitigation measures.

Dan Wilcox: We might expect the opposite to be true, as this mitigation plan is developed we will have considered a number of the measures and much of the coordination has already been conducted. Rather than creating some new body to evaluate this implementation we take advantage of existing groups.

Ken Barr: Reiterated the fact that these options or examples, are just that, one example of many. Said we would examine administrative costs and increase if necessary.

4. DISCUSSION OF ANNUALIZED SPREADSHEET - BRAD THOMPSON

For these discussions we can ignore inflation, since all the costs shown for all years are in 1999 dollars. However, the analysis of mitigation costs and other economic costs and benefits does address discounting. It is the discounted costs that are utilized in the Federal analysis. The discount rate is used to reflect the willingness of the nation to trade off investing resources now versus investing them in the future. The discount rate is similar to the interest rate you could get at a bank. Given a choice between \$100 today and \$100 one year from now, knowing you could get 6 3/8% by investing the money in a savings account, you would want the \$100 now or \$106.38 a year from now. A given sum of money is more valuable now, than that same sum at any point in the future because of its ability to grow if it is profitably invested or saved. The discount rate takes this time value into account.

The Draft Mitigation Cost Summary Tables show the undiscounted costs and discounted costs. Rather than occurring as a single lump sum cost in a given year, the mitigation items represent a cost stream with expenditures distributed throughout the study horizon.

In discounting, all alternatives must have the same base year to allow comparison. For these analyses the base year is 2013. This is the year the majority of improvements would be constructed and in place under a "Build ASAP" (as soon as possible) scenario. These costs are assigned to the year when they are expended and are then compounded or discounted to the base year at the Federal Discount rate. The compounding and discounting take into account the opportunity cost of using the money for this project versus making some other Federal investment. The opportunity cost is set equal to the Federal Discount rate at the time of the study completion (the rate of 6 3/8% was used, since this is the anticipated FY2001 rate).

In compounding we take costs incurred before the base year and calculate what the value of the original cost would be in year 2013. An undiscounted cost in 2013 remains unchanged if discounted to the base year 2013. However, cost prior to 2013, 2000-2012 are compounded and grow larger (e.g. they are expended prior to the base year and should be providing benefits equal to the discount rate over these years). While costs occurring after 2013 are discounted and become smaller in relation to the base year (expenses in future years allow Federal dollars to be used on other investments in the immediate term).

The one other calculation that is made is to determine the average annual costs. This number is determined by first totaling the discounted and compounded costs for all items in the project base year (2013). This total cost is then annualized over the 50-year planning period at 6.375%. The total cost of mitigation can be thought of as the price of a house, while the average annual cost is the associated annual payment made once a year over 50 years. This annual cost can then be compared to the average annual benefits, as long as the same base years are used.

Mark Beorkrem: The actual decision on when the optimal time for implementing a mitigation measure needs to be considered by the NECC. This should be done outside this evaluation of discounting. The two may not agree.

Ken Barr: We have evaluated implementation schedule based on the dollar advantage.

Rick Nelson: Is there a financial advantage to doing mitigation projects before and during construction or is it designed to take advantage of CG funding?

Brad Thompson: The earlier a given amount of mitigation is accomplished relative to the base year, the greater the discounted mitigation costs. However, if implementing some mitigation efforts earlier reduces the overall cost in later years, it may result in an overall savings. The main factor driving the timing of mitigation should be environmental needs.

Dan Wilcox: Why did you use a 2013 as the base year when our decision has to be made in 2000.

Brad Thompson: This is decision made by the economics work group, but it relates to setting the base year equal to the time frame when the majority of improvements would be in place and begin providing benefits.

Bill Bertrand: Using 1999 dollars then go to 2013, then discount back to 2000, doesn't make sense.

Brad Thompson: The reference to 1999 dollar levels only relates to level of inflation. This is separate from discounting, which is done to take into account the time value of money/opportunity cost of investing in this particular project in a given year versus some other Federal investment.

Ken Barr: In terms of actually getting construction dollars to implement the projects in future years, inflation is taken into account as part of full funding adjustments. The discounting is used just in the study process and is important to the federal government in assessing the relative value of various potential investments.

Jeff Stein: This is also being done on the same fashion for economics and engineering?

Ken Barr: Yes, all costs and benefits in the study are evaluated using the same base year and discount rate.

Rick Nelson: Does the spreadsheet factor in an inflationary cost?

Buddy Arnold: Once Congress approves full funding for the project they build in the inflationary cost.

Dan Wilcox: The real challenge is to identify the content of this spreadsheet and whether it makes sense.

Jeff Stein: Is this spreadsheet static or dynamic?

Rich Fristik: It is dynamic.

Gretchen Benjamin: Have contingencies and other administration costs been factored into this spreadsheet?

Ken Barr: Yes the 25% contingency has been applied, we will see if we can break out and summarize the specific administration costs for each category.

Buddy Arnold: Inflation on construction costs will also get inflation on the benefits, ultimately the ratio of the two should remain constant.

5. INITIAL PERCEPTIONS ON THE ADAPTIVE MITIGATION APPROACH - ALL

USFWS (Rick Nelson): We like the flexibility and timing being proposed. The Corps should be commended on taking on this approach, especially in that it is essentially breaking new ground in terms of Corps policy. In general, the concepts presented are good but need more work. Incremental approach is still hard to accept when we (USFWS) and the states want to include an evaluation of existing effects (9-foot channel project) which are largely being ignored by the Nav Study. Need to iron out coordination for this and ensure that what is promised will come to fruition.

USFWS (Jon Duyvejonck): I would like to refer the Corps to a recent publication in the Journal of Conservation Ecology by Barry Johnson (USGS, La Crosse) which reviews the philosophy of resource management. This paper emphasizes that Resource Managers need to be flexible as well. I believe we should set up an impartial committee that makes sure we are flexible. For example, we might want to transfer money from one resource component to another based on evaluation of impacts. It will be difficult to convince Corps headquarters that this Mitigation Strategy is not just another pot of money for someone to fund their favorite project. Don't want to be tied into a decision made in 2000 that may be modified upon additional data or information in the future. Who is selected to do the monitoring could be a sticky issue. We need to be mitigating for what is actually occurring (impact).

Dan Wilcox: No clear ecological condition objectives for the UMRS to work with. If these objectives were clearly laid out we would have a gauge for success or failure.

USEPA (Al Fenedict): The goals need to be clearly stated before we can move forward, so far it appears that the strategy is primarily focused on site or species specific mitigation options, we need to be aware of the ecological nature of the system and it is difficult to break them out, need to take a synergistic approach. Still not clear on the operation and administration, it may look good on paper but may be worthless in implementation. Need to be accountable for how the money will be spent. Mitigation should be part of the project and not as a separate entity. This strategy should be incorporated into the project. Purpose of mitigation is not to maintain status quo, but to improve upon the system. The system as a whole continues to decline. None of the EMP efforts, lessons learned, were not covered in the strategy. The extent of the mitigation appears to be small scale (site specific) like to see more of a systemic approach. Don't agree with the Corps definition or use of "significance". NEPA threshold has been tripped with the use of terms of like low medium and high significance.

Steve Bartell: We are looking at only one (Commercial Traffic) of many stressors on the system, we may do a great job improving a backwater but other actions occurring within the basin may cause a net loss or degradation. States need to identify other stressors affecting specific areas where mitigation is proposed to ensure they are considered in the design process to ensure that measures implemented for this project will be successful.

Jon Duyvejonck: Identify actions that would make your improvements mute.

Gretchen Benjamin: Many of the additional stressors are intricately related to the Project since the increased barge traffic is ultimately tied to increased agriculture. The more land that is devoted to the production of agricultural grains ultimately affects the amount and rate of sedimentation.

Al Fenedict: Increase scope of the project consideration to include evaluation of multiple stressors.

Ken Barr: The forum that is ultimately charged with implementation of the mitigation strategy should take into account these multi stressors.

Rick Nelson: Don't necessarily agree that existing regional groups (RRCT, EMPCC, FWIC) could handle this task due to the internal policies, and politics involved in the various Corps districts. How to you control or coordinate with USDA and other fed and state agencies? We need to think on this issue so we can step back and take a holistic view of the situation. Not enough data to make the dollar associations with mitigation alternatives, not ready to buy in.

Bernie Schonhoff: How can we set goals and objectives when we have such a fuzzy idea of existing conditions?

Dan Wilcox: Current efforts in other studies are trying to take a more holistic approach of addressing or identifying desired existing conditions (i.e. HNA).

Ken Barr: There a number of parallel efforts that are currently in various stages of completion that will ultimately feed into our implementation of the mitigation strategy.

Al Fenedict: There are other pots of money out there to address some of these other stressors or concerns. Approach for the Nav Study needs to be more ecological. The Corps is the mainstay in this problem, converting a riverine system to a series of pools.

Jon Duyvejonck: we need to continue to evaluate opportunities for multiple benefits for each mitigation alternative or avoid minimize measure.

Al Fenedict: Expectations for the Monitoring component need to be clearly laid out. On site specific basis has the objective been met or is more needed. Geographical approach needs to be better laid out and identify how decisions were made to focus on specific reaches or pools. Refer to Section 101(b) of NEPA which states *"In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential consideration of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may-*
(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;"

Jeff Stein: The mitigation strategy needs to better evaluate the system wide effects. Concerned that the economic grain forecasts are missing the big picture in that increased yield has to come from somewhere. If the 20+ million acres currently in CRP where to come back on line there would be considerable environmental effects which I believe are not being addressed in the Corps Environmental Evaluation.

Rick Moore: Generically, we agree with the adaptive mitigation approach, however, we have concerns about this process. The foundation is built on inconclusive and incomplete studies, and as such, provides a poor basis for discussion of mitigation. Concern whether these numbers are reflective of actual effects. The Corps still has mitigation issues that have not been met for other past improvement projects, i.e. L&D 26, We fell for those promises once, and won't do it again. We understand the time constraints but are unsympathetic since many of these issues were raised several years ago.

Ken Barr: Throughout this study we have been keenly aware of three main issues that have been raised many times in many different forums: (1) Operation of 9-foot channel project, (2) Mitigation for 2nd Lock at L&D 26, and (3) Existing data gaps.

Rick Moore: The fact that these concerns have not been addressed is and should have been mitigated before in the past.

Tom Pullen: Just so we all understand the facts---a few years back, a quick and dirty analysis of actual traffic at Melvin Price was made. My recollection is that this analysis indicated that there had been no increase in traffic attributable to the 2nd Lock. Use of the new economic models may result in future traffic projections that also show no increase. In any event, the Corps has made the commitment to mitigate for adverse impacts resulting from increased traffic due to the 2nd Lock. If further analysis of actual traffic over the past few years demonstrates an increase attributable to the 2nd Lock or if the new economic models project an increase attributable to the 2nd Lock, then mitigation would be implemented. And conversely, if analyses of actual traffic or use of the new economic models show no incremental traffic increases due to the 2nd Lock, no mitigation would be required. The St. Louis District is completing these analyses now and we should know how things turn out in the near future.

Ken Barr: Do the States have a preference of commenting now or after the individual component discussions?

Bernie Schonhoff: I agree with the idea of getting away from site specific, don't like the idea of starting from a shaky foundation, not sure on to how best to separate or address additional stressors on the system, just because we mitigate for one stressor does not mean the benefits will be achieved.

Bill Bertrand: There may not be a high probability of seeing this strategy succeed, but don't see that we have many other options.

Ken Brummett: Will reserve much of my comments for specific elements. Much has been done (addition of alternatives) since the initial site specific studies were completed and there is a need to tighten these up.

Ken Barr: Details will be addressed in the Planning and Engineering Design (PED) Phase which will begin in FY 2000.

Gretchen Benjamin: If we determine the impacts are greater than initially projected how will we get to the extra dollars to mitigate? Don't think the mitigation dollars as presented go far enough. Don't think the industry is giving up anything for this project, feels time at the last 27 meetings has been wasted if this is the end result of several yeas of effort.

Tom Keevin: Provided a summary and update of the L&D 26 second Lock issue. CG funding for second lock was about to end , it was extended to account for monitoring and mitigation. Division made a decision for mitigation for second lock to wait until they were able to better understand the actual effect. We are going to be developing the same economics and environmental evaluation as used for this study.

Rick Nelson: How does this apply to the existing study, in that we may never reach the projected traffic? If the Corps was wrong the first time aren't they likely to be wrong again?

Tom Keevin: We used a different model in the past (GEM) the current model is much more conservative.

Bill Bertrand: Once the Corps obtains this additional information what do you intend to do with it?

Tom Pullen: If traffic increases are projected then mitigation dollars will be set aside for this purpose.

Tom Keevin: MVS has implemented a 1 million/year Avoid Minimize program, which was stipulated in the project mitigation strategy for L&D 26.

Rick Nelson: The Mitigation package also called for systemic mitigation which has yet to be implemented

Mark Beorkrem: Has the NECC been part of the scoping process of for the Nav. study.

Ken Barr: That was a parallel process. The scoping meetings were held in 1995, major study scoping changes were made. This group (NECC) has assisted in directing the course of the studies designed to address the project impacts on the environmental components.

Mark Beorkrem: I still have serious concerns regarding the Faucett report, believe this study needs to be augmented with calculations and new information regarding farm policies and future expectations. How will this be factored in to the final analysis?

Ken Barr: The sensitivity analysis conducted by the Economic Workgroup should address these concerns.

Dave Tipple: The current marching orders are to proceed with currently available information to complete the study on schedule. There are no plans to adjust the schedule.

LUNCH

6. BACKWATERS AND SIDE CHANNELS – DAN JOHNSON

Dan provided a handout (**Attachment 4**) which summarized the individual backwaters/ and sides channels showing first cut at costs and types of projects that could be used to mitigate. The handout also addressed a number of backwaters that the Corps (Tom Pokrefke) was asked to provide clarification on at the request of Bill Bertrand and Bernie Schonhoff.

The mitigation options, feasibility, locations, and costs were derived by a multi-disciplinary team of Corps employees that was assembled to discuss and identify potential structural measures to alleviate impacts. The mitigation strategy outlined in the read-ahead materials outlined the areas and measures considered by this team. Would like to solicit groups input regarding this proposal.

Dan Wilcox: How are you defining a drop structure?

Dan Johnson: An overflow structure cut into the non-overflow section of the dam, designed to provide a source of fresh oxygenated water to adjacent backwaters.

Dan Wilcox: For backwater areas with dredging as the mitigation alternative, do the costs reflect a one time event, or do they include routine maintenance dredging?

Dan Johnson: It is likely that occasional operation and maintenance will be required to maintain such areas, however, the selection of areas should take into consideration the likelihood of future maintenance dredging, preferentially selecting those with minimal maintenance or self maintenance.

Bill Bertrand: At Batchtown, IL the St. Louis District Corps was adamantly opposed to the idea of drop structures, how will this be approached or perceived by the other Districts?

Dan Wilcox: Both Rock Island and St. Paul Districts have used this measure with success.

Bill Bertrand: What about the 30+ backwater sites that Bernie and I asked for specific details?

Ken Barr: Tom Pokrefke addressed each individually in the written section of the handout (**Attachment 4**), we still owe you information on the drawdown effects.

Bill Bertrand: I have been in a backwater attached to a side channel and experienced significant drawdown. I know it happens and would like to know the frequency and number of sites.

Dan Wilcox: The relationship between channel width, cross sectional area occupied by the vessel, and the vessel speed will ultimately determine the amplitude of the drawdown, as to the frequency of its occurrence that remains in question.

Gretchen Benjamin: Does the model assume an average speed for a vessel?

Steve Bartell: Each vessel configuration has a calculated average speed which is applied equally throughout the system.

Doug Blodgett: What about the action of two vessels meeting in the main channel then throttling up as they pass one another, I have observed substantial sediment plumes generated from such events in the Illinois River.

Ken Barr: The models do not account for such an event. It would be difficult to identify the frequency and location of such events and therefore no way to assess the number of backwaters that would be impacted.

Jon Duyvejonck: How would you implement an adaptive approach to this element (Backwater Impacts).

Ken Barr: Within the various reaches we will look in more detail at specific backwaters and may find out that these areas are ecologically different in terms of value and overall effect. In this manner we would evaluate and prioritize areas where we could do the most good. Also, we would try proven methods along with some innovative new techniques for mitigation.

Dan Johnson: As we collect additional site specific information we may identify other stressors to a specific location that may elevate it in terms of it's priority.

Jon Duyvejonck: If additional information becomes available we may want to add new sites not currently on the list.

Dan Wilcox: Sediment budgets have been calculated for the Illinois River, Pools 11-26, and certain backwater areas: Petersen Lake in Pool 4, Weaver Bottoms in Pool 5, and Lake Onalaska in Pool 7. Such information may help identify the amount of sediment coming from various sources and provide a gauge to evaluate success of a specific measure.

Tom Pullen: Suggest we provide for a periodic revisiting of these issues.

Bill Bertrand: Stipulate that adjustments of funding also be considered in this revisiting.

Jeff Stein: Induced systemic effects on agriculture should also be carefully followed, also how was the backwaters selection process conducted.

Ken Barr: Briefly reviewed the backwater screening process that has been detailed in the previous two NECC minutes.

Gretchen Benjamin: It is important to note that NO impounded portions of the pool were included in that analysis.

Ken Barr: Currently about 20% of the agricultural products produced in the Midwest get on the river system.

Jeff Stein: It is not important whether the grain from induced agricultural production comes onto the system but rather the water that runs off this land and moves more sediment into the system.

Bernie Schonhoff: All the backwaters I identified are growing land or getting shallower and I find it hard to believe that none of them are subject to filling by passing tows.

Ken Barr: It is likely that other sources are the cause for these problems.

Dan Wilcox: Overall, the contribution of vessel-resuspended sediment to these areas is probably very small in comparison to other sediment transport processes.

Al Fenedict: These sites might be better locations for a successful mitigation measure than the ones currently being identified.

Tom Keevin: This may present a host of problems with tradeoff for alternative location, likely to require additional coordination.

Ken Barr: Must remember that mitigation dollars are typically spent in those areas where impacts are projected to occur.

Gretchen Benjamin: Many of these mitigation options are currently being used for main channel maintenance. How can you claim mitigation for projects you would be considering already. Many of the locations I see on this list are already being considered within existing pool plans.

Dan Johnson: We are at the beginning of the planning process, it may be that some of these areas are currently being addressed with other efforts, then that would free up additional dollars for other projects.

Jon Duyvejonck: Reiterated the need to look for overlaps and multi benefits in terms of the overall mitigation accounting, specifically in terms of the currency tracking for this strategy.

Ken Barr: We will do the incremental analysis to address this issue, many of our project are habitat based and are not on individual plants or fish. We envision many will provide multiple benefits.

Jon Duyvejonck: Depending on how you account for the multiple benefits, you run the risk of over or under mitigation in specific areas. Corps headquarters typically does not want to spend any more money than needed.

Ken Barr: That fourth element of the Corps mission (Environmental Restoration) is starting to sink in and we are seeing new emphasis on this out of HQ.

Rick Nelson: How can we ensure that mitigation dollars won't dry up once the construction phase is complete?

Ken Barr: A reevaluation clause may allow the continuation of mitigation dollars beyond construction, this may protect us from a sunset clause. Advance PED \$'s will offer us an opportunity to move out and get a head start on further refining our assessment of impacts and development of an appropriate mitigation strategy.

Jon Duyvejonck: It is hard to evaluate the mitigation alternatives without having first hand knowledge of these areas.

Ken Barr: Let's plan on going out and conducting site visits for some of these specific backwaters this year.

7. ADAPTIVE FISHERIES MITIGATION – SCOTT WHITNEY

Scott provided a Powerpoint presentation summarizing the adaptive mitigation approach as it pertained to the fisheries component. A copy of his presentation is provided as **Attachment 5**. He also provided impact summary handouts for each of the five improvement Scenarios (WOP, B, E, F, and J) and a summary comparison of Channel Catfish Commercial harvest -vs.- projected impact (EAL) for available pools **Attachment 5**. NOTE: Errors identified during the meeting regarding the EAL numbers for the Channel Catfish table have been corrected for the Draft Minutes. Recruitment Forgone numbers were reported in the original handout not Equivalent Adults Lost. Scott indicated that much of the information regarding fisheries study results and assessment of impact significance was covered in the NECC Summary package distributed in October 1999, and were subsequently not repeated in the mitigation package.

SLIDE 2 SIGNIFICANCE

The significance rating as it is used in the mitigation document is defined as follows:

LOW - little to no measurable impact or inconsequential loss

MODERATE - measurable impact with some losses

HIGH - relatively high measurable impact with relatively high losses

NOTE: Based on the discussion that arose on this topic at the NECC, hereafter we will replace the term "significance" with "effect" to avoid confusion or conflict with the connotations and/or NEPA definition of significance.

The importance of model parameters will be addressed in the Sensitivity Analysis currently being developed by Steve Bartell. This report will identify those model parameters which most affect the model outputs used to evaluate fishery impacts from increased barge traffic.

The Fish Mitigation Section identified four main areas of Significance: 1) Impacts; 2) Spatial significance (where do impacts occur on the system); 3) temporal distribution of impacts; and 4) species significance.

SLIDE 3 IMPACTS (Details and results for the evaluation of impacts provided in Oct. 1999 NECC Summary Package)

Pressure (Low ~~Significance~~ Effect) - Range of pressure changes that could be encountered in the UMRS would not exceed levels shown to cause mortality of larval fish.

Hull Shear Force (Low ~~Significance~~ Effect) - hull shear stress values of tows do not exceed levels shown to cause mortality of larval fish species. Results agree with the published literature.

Drawdown (Low ~~Significance~~ Effect) - some species (shovelnose sturgeon and paddlefish) are inclined to swim against drawdown currents (behavioral response) and may be stranded in areas with certain bank profile (1:5). Currently evaluating total acreage of shoreline drawdown using models developed by Steve Maynard (WES).

Larval Entrainment Mortality (High ~~Significance~~ Effect) - Model results from the larval entrainment model are the primary driving factor behind the fish mitigation. Most of discussion will focus on these results and how to mitigate for them.

Adult Fish Entrainment (Low ~~Significance~~ Effect) - The best available information suggests that adult fish get out of the way of approaching tows and subsequently avoid entrainment. Of the forty-three entrainment sample runs, only two runs collected entrained adults, a total of 3 dead gizzard shad. The Corps is seeking to implement additional sampling to gain additional entrainment samples in FY 2000. In addition, also funding a feasibility study to evaluate the potential for developing a large net that can be pulled directly behind the tow, thus capturing a larger volume of the entrained water. Hopefully, this latter method will prove successful and a more definitive answer may be attainable.

Displacement (Low ~~Significance~~ Effect) - Laboratory studies indicate low probability of displacement due to buffering action of wing dams. Will obtain additional field study information in early February 2000, looking at fish response and velocity changes behind wingdams as the result of passing tows.

Jon Duyvejonck: Would like to be notified when fish displacement studies are being carried out so he may observe.

Doug Blodgett: If fish move out of the way of a tow, then they are displaced, this displacement could occur in overwintering habitat or spawning habitat, which may result in adverse energetic cost to the individual. Don't understand how impacts on overwintering habitat or spawning could be considered low ~~significance~~ effect. The Illinois River, does not have many remaining areas for fish to seek shelter outside the main channel, subsequently, the impacts would likely be of higher significance.

Scott Whitney: Studies to evaluate displacement looked primarily at the winter period when the energetic costs to fish would be the greatest. In main channel areas fish seek refuge in and around structures such as wing dams. Don't disagree that the implications for the Illinois Waterway would be greater, but we must look at the overall impact resulting from improvements. Traffic projections for the Illinois River indicate little increase in traffic, rather a more efficient handling of existing traffic. Fish model results indicate the fishery impact in the Illinois River represents <5% of the total impact for Scenarios F or J and < 1% for Scenarios B or E.

Bernie Schonhoff: What is meant by "low significance", and how could forage fish be considered not significant since they are a vital component of the aquatic ecosystem?

Scott Whitney: The term low significance is defined in the mitigation package as "little to no measurable impact or inconsequential loss". Forage fish are without a doubt, a highly significant component of the aquatic ecosystem. However, the projected impact to the forage component was determined to be <1% (based on LTRMP data) of the estimated standing stock, an "inconsequential loss".

Jon Duyvejonck: Wants any study designs proposed for the adult fish entrainment sampling to be reviewed by the fisheries resource experts.

Spawning Habitat (Undetermined ~~Significance~~ Effect) - Steve Bartell et al. is currently evaluating the impact to fish spawning habitat using a HSI model application. Fish guilds are being considered based on their spawning requirements. The variables being considered for the model include ambient current, tow velocity, water depth, water-level fluctuation, substrate size, presence of structures, scour depth, water temperature, dissolved oxygen content. The substrate size and structure are assumed to be at optimal conditions for all pools. Guilds which

experienced reduction in spawning habitat in the initial runs are: emerald shiner, Sauger, Spotted Bass, and Largemouth bass. In order to reduce the simulation time, Steve Maynard, Scott Bourne and Rose Kress are implementing an aggregated cell approach so that we reduce the total number of cells to be assessed in each pool. Once that is completed we will rerun the HSI model. Depending on the reduction achieved in simulation time, we should be able to finish it within a month or within two months (if the reduction is not sizable). More specifics will come once at least one run with the aggregated approach is completed. A single model run now requires approximately 3-4 days.

SLIDE 4 SPATIAL SIGNIFICANCE

Mississippi River

Referred to handout tables and Table 2 in Mitigation Strategy which reviewed the fisheries impacts within four reaches of the Upper Mississippi River. The majority of the fisheries impact (68%), as determined from the Equivalent Adult Loss (EAL) model output, are projected to occur in Pools 16-26. Pools 9-15 would experience approximately 28% of the impact. Pools 1-8 are expected to experience insignificant impacts to the fishery. Allocation of mitigation dollars will likely follow this breakdown of projected impacts. We are still awaiting the fish model outputs for the Open River, therefore the assessment of impacts is still pending.

Illinois Waterway

Lower and Middle reaches of the Illinois would experience moderate fishery impacts while the upper reach is not likely to be impacted. Overall the total fishery impact on the Illinois Waterway under Scenario J would constitute only 4.8% of total fishery impact. Under the other three improvement scenarios the Illinois Waterway would not experience significant losses.

Jon Duyvejonck: What is the lower and upper limit for the given numbers, give the uncertainty. We need these confidence limits to make an evaluation.

Steve Bartell: We can and will provide these numbers, the tables you have merely provide a summary of the point estimates.

Bernie Schonhoff: What are the negative numbers on some scenarios.

Scott Whitney: Under declining traffic scenarios, observed in the Without Project condition, the model actually creates fish. The numbers given are the incremental change between the base conditions YR 2000 and the year shown (i.e. 2040), traffic declines are projected in the Upper Pools (above Pool 8) in the next forty years in the WOP condition due to congestion lower on the system.

SLIDE 6 TEMPORAL CONSIDERATIONS

- Build as soon as possible
- Optimized schedule
- Project initiation and completion

This information was covered in detail during Brad Thompson's discussion of Annualized Benefits.

SLIDE 7 SIGNIFICANCE OF IMPACTS TO SPECIES

Forage (low ~~significance~~ effect)

Sport (high ~~significance~~ effect)

Special Concern (high ~~significance~~ effect)

Commercial (medium ~~significance~~ effect)

Rough (low ~~significance~~ effect)

Exotic (low ~~significance~~ effect)

Bernie Schonhoff: What would the surrogate species for the forage species be if you remove emerald shiner and gizzard shad from consideration?

Scott Whitney: Technically there would not be a surrogate, however the reason this group of species is listed as low ~~significance~~ effect is due to the fact that they are extremely abundant and our projected impact will affect less than 1% of their population (based on comparison with LTRMP tend pool assessments). We also believe that any mitigation measures employed may also benefit forages species.

Ken Barr: With most fish species, especially forage species, there is a compensatory reserve present which allows the population to withstand annual losses without causing population decline.

Dan Wilcox: Because the standing crop for such species is so large, and because these fish have a high fecundity, the impacts would not negatively affect the overall population levels.

Jon Duyvejonck: If 1% of population is being cropped, probably not a problem, but we do not know if it is 1%.

Scott Whitney: Based on the best available information, LTRMP dataset, we have calculated that the projected impact to represent less than 1% of the current standing stock of these two species.

Jeff Stein: What about the impacts to predators that year, you are taking away a portion of their food supply. If this occurred year after year there would likely be long-term effects. A compounded effect.

Dan Wilcox: Compensatory mortality. These species are short-lived, have high fecundity, and a high compensatory reserve. They experience large inter-annual variation in abundance largely because of weather and river discharge, rather than because of entrainment mortality or even predation. The modeled entrainment mortality is sufficiently low to not greatly affect total annual mortality or compensatory reserve.

Ken Barr: We are all looking into doing some additional population modeling to address this issue, but data is limiting.

Ken Brummett: Loss of 597 Lake Sturgeon is significant in Pools 16-27.

Bill Bertrand: We are overlooking some key species (e.g., sturgeon, paddlefish, etc.,)

Scott Whitney: There are levels of evaluation of fish species impacts. First where does it occur, second what is the degree or magnitude of the impact, and third what type of species is it occurring to. The last item (species) will definitely play a major role in how the impact is viewed (significance) and how to approach mitigation. Special concern species such as the Lake Sturgeon, Paddlefish, and Blue Sucker will definitely be addressed. Don't be misled by the tables and the coloration used, these tables were specifically designed to show spatial differences in species impacts and a relative comparison of species impacts (low to high).

Bill Bertrand: Did you get a hold of the Commonwealth Edison population estimates for Pool 14.

Steve Bartell: Yes, this information is summarized in the Fish Model Report.

SLIDE 8 CATFISH EXAMPLE

The comparison of average annual (1985-96) commercial catfish (channel, flathead, and blue) catch and the projected Equivalent Adult Loss (EAL) for Scenario J, Year 2040 was prepared to provide a context for the magnitude of the projected fishery impact. The overall impact to Miss. River Catfish represents less than 5% of the average annual commercial catch while the IWW represents less than 3% of the commercial catfish catch. The Pool comparison indicates a somewhat higher impacts in pools 21-25, with an impact of 20-30% of the commercial catfish catch. For the lack of actual standing stock estimates this is one means to evaluate the potential adverse consequences of fishery loss.

Gretchen Benjamin: We can change sport regulations, we can not change the number of fish chopped up by props. This is not a proper comparison.

Scott Whitney: This table provides a context for the projected impacts to specific fish species. With the lack of standing stock estimates it is one of a very limited number of ways by which to gauge the magnitude of the impact.

Dan Wilcox: Entrainment at electrical power generating facilities was heavily studied. We used many of the same approaches in this analysis that were done in the power plant studies. This technique is simply a reference of comparison to determine if the impact will fit in a shoebox or a boxcar.

Gretchen Benjamin: With harvest, we can impose restrictions if we see a changing population. We can not stop barge traffic – this is never an option.

Ken Barr: The only way to keep the traffic down, is if the effects were so severe from the incremental change to recommend giving up \$16 million dollars of net annual economic benefits.

Al Fenedict: The adverse effects are diluted by only looking at the reach comparisons shown in previous tables, rather than the individual pool – 11% may be significant. The USACE own language for social impacts suggests that an 11% reduction is an impact.

Scott Whitney: All of the model outputs are produced on a Pool basis. I have merely grouped them into the reaches to summarize the projected fishery impacts. The reported Commercial Harvest values also have a level of uncertainty or bias as most fishery biologist will tell you. The % comparison is an attempt to put the model numbers in context with some real life fishery value.

Jon Duyvejonck: Recommends that you eliminate the comparison because it is misleading, especially when considering how commercial data is collected.

Al Fenedict: A commercial fisherman would be upset that the resources is heavily impacted.

Jeff Stein: Pointed out discrepancy in the numbers between two tables for commercial catfish data.

NOTE: These numbers have been corrected and provided in Attachment 5 in their corrected form.

Al Fenedict: Have you pooled recreational sport fishing data?

Scott Whitney: We have compiled some info, but it is very spotty and very site specific. Generally based on creel surveys or fishing tournament data.

SLIDE 9 AVOID MINIMIZE MEASURES

Reviewed the various measures presented in the Mitigation Package.

Traffic Regulations:

Steve Bartell: Provided summary of the speed regulation exercise. Because of non-linear relationship between transit time and water going through the prop, more time in the pool associated with slower speed would result in higher larval mortality.

Ken Barr: Possibly reducing the amount of traffic during time of year with abundant larval fish may be the only way that scheduling changes may have an effect. Moving the sailing line would not reduce impacts.

Structural Measures:

Ken Brummett: Filling (sedimentation) does occur in offshore revetments, they do have an expected life. Location will be the key to extending the life of the structures.

Jon Duyvejonck: Get someone to look at different configurations (using hydraulic models) of offshore revetments and wing-dikes to maximize effectiveness through design and placement.

Dan Wilcox: Site by site hydraulic conditions will dictate how long a structure will remain effective.

Bill Bertrand: Could we hold a workshop to learn more about these structures?

Tom Keevin: We could hold a two-day workshop with the hydraulic engineers explaining what they can and cannot do, also talk to some of the biology experts about effectiveness, and also a chance to go out into the field to observe the structures first hand.

Ken Barr: We will set up a workshop for Illinois and Missouri biologist wishing to learn more of these measures.

Dan Wilcox: We must also try to implement mitigation measures that increases life in the river, not simply concentrating life.

Gretchen Benjamin: A better mitigation approach would be to develop new side-channel habitat. Does this measure include reclaiming side-channels eliminated by levees within the flood plain.

Scott Whitney: As presented, the mitigation measures primarily focus on improving existing side channels with costs based on previous HREP type projects.

SLIDE 10 MITIGATION ALTERNATIVES

Provided overview and distinction between systemic and reach specific alternatives.

Systemic Alternatives

Fish Passage

This option would include both the development of a comprehensive plan to address fish passage throughout the UMRS and pilot projects at specific location. Lock and Dam 19 feasibility evaluation will likely be taken up during the PED phase. At past NECC meetings, WI made it clear that they would not consider fish passage at any of the other Locks and Dams as mitigation, since the Corps built them. Therefore, we are evaluating the potential for a fish bypass at L&D 19. It is the largest dam on the UMRS and would also be the most costly in terms of project cost. A preliminary cost of \$40 million dollars has been presented, and not surprisingly has caused some hesitation on the part of biologists and the Corps. Once this project gets through the feasibility stage we hope to have a more realistic cost estimate.

Water Level Management

Dave Gates, from St. Louis District presented the Pool Management strategy for Pool 25. One of the biggest obstacles with this alternative is that it would require land acquisition and the State of MO does not use eminent domain. Would need to develop preliminary assessment of hydrographs at each river mile relative to land elevation. Revisions would also need to be made for the pool management guides. A sizeable real estate component would be involved for land acquisition, at present we believe this would represent approximately 2/3 of the project cost. Adaptive mitigation would allow for modification of how the pools would be managed for the desired fisheries response. May be able to relate habitat lost through the navigation study to habitat gained through pool management. St. Louis has done some pool management with some positive fishery results.

Ken Barr: In our previous mitigation matrix, water level management was not identified and has not been considered to date. It was considered a separate entity and not part of the navigation study.

Dave Gates: We are running out of options for the funding of this project. If it is not taken up by the Nav. Study it is likely that it will not be developed beyond the feasibility stage.

Bill Bertrand: I would like to see pool management investigated further to see if it would work. It has the potential to impact large pieces of habitat – unlike small isolated habitat improvements.

Dave Gates: Real estate could be a concern – purchasing private lands could be problematic.

Ken Brummett: Unsure how much land the state of MO would have to buy, since they already own a large portion.

Dan Wilcox: In addition to pools 24-26, river regulation may be possible in other pools to provide benefits to fish. This may also require additional real estate costs but easements may be more cost effective.

Ken Barr: Do we think the species most effected would benefit from river regulation.

Bill Bertrand: Could help crappie and bluegill losses, perhaps catfish.

Ken Barr: It's a great thing, but unless we can tie it back to the impacts, this is a dead end road.

Jon Duyvejonck: Would be more excited if their was greater control over pool elevation.

Dan Wilcox: We may be able to perform some form of pool management without widespread feasibility studies for each pool.

Ken Barr: We will take some PED money to do a feasibility study for pool management on Pool 25.

Ken Brummett: We (MO) want to be involved on this feasibility study.

Dave Gates: A large shallow water backwater can be helped by not allowing great water fluctuations during the spawning season.

Tom Pullen: Need to identify all benefits to make sure this is kept in the analysis.

Bill Bertrand: In certain states, pre-fab fish passageways have been implemented and found that they were effective. Lets do something in this area before committing \$40M.

Scott Whitney: A prefab passageway would be unlikely to work at L&D 19 due to the size. We are proposing to develop a physical model to evaluate the hydrologic requirements and the possible effectiveness. A scaled down prefab may be more applicable for some of the other locations (i.e. L&D 15).

Dan Wilcox: For a fish to find a small-sized fishway in the upper Miss River, it would need to be a miracle. Jim Wiener would like to make this a part of the LTRMP research effort. Would like to develop the comprehensive assessment of this topic.

Reach Specific Alternatives

Moist Soil Units (MSU's)

There are varying levels at which one could develop and manage these MSU's. Water levels could be maintained by pumps, the area stocked with specific species of fish, and intensively managed as a natural fish hatchery. Another, less costly alternative would be to allow the unit to be more natural, such as the experiment that was tried at the Lake Chautauqua HREP, taking advantage of natural hydrologic events and natural reproduction.

Ken Brummett: We need to ensure that MSU's are built and managed in such a way to ensure fish benefits are achieved. Would require that gates and pumps be put in place to maintain elevated water levels. The area could be drained, at the appropriate times to ensure survival, should also have deeper areas.

Tom Keevin: This could be a method for producing fish to offset impacts. How many juveniles would you need to produce an adult to off-set impacts?

Bill Bertrand: Would prefer you use a different term to describe this type of project since MSU's are primarily established for waterfowl benefits.

Scott Whitney: How about using the term Fish Nursery Areas (FNA's)?

Bernie Schonhoff: That is fine and good if larval production and/or habitat is the limiting factor. But what if yearling habitat is the limiting factor.

Scott Whitney: Steve Bartell developed a table of multipliers which converted the Recruitment Forgone (RF) model output into the number of recruits necessary to produce a single adult. This calculation take into account the duration of the various life stages and their associated mortality rates. The revised recruit number was used in an exercise to evaluate the potential cost of fish replacement using AFS values for 5" fish. Based on this exercise, for Scenario J the annual fishery replacement cost is just over \$2 million. This exercise provides a context for the amount of dollars that could be applied in a habitat based approach to provide fishery benefits.

Dan Wilcox: There is not much age-specific mortality data. We do have mortality for larvae to adult. Do we assume a linear relationship?

Steve Bartell: In some cases we had to assume this when data was missing; in these cases, an uncertainty factor was included.

Dan Wilcox: The AFS values are based on raising fish in culture and stocking them.

SLIDE 11 MONITORING

Monitoring would be an important part of the adaptive mitigation strategy since it will be used to acquire pertinent information necessary to identify need, design projects, and evaluate performance. as such monitoring is likely to take on the following forms:

Up Front Monitoring

Performance Monitoring

Habitat Utilization

Impact Assessment

SLIDE 12 MITIGATION STRATEGY EXAMPLE

The EXAMPLE of an Adaptive Mitigation Strategy for fish was provided and discussed in terms of it's development, comprehensiveness, suitability, and acceptability. One thing that still needs to be developed is an analysis of the expected productivity (fish biomass) and specificity (species) of each of the measures and alternatives. For this example the System Impacts were divided into the Miss. and IWW.

Gretchen Benjamin: Has floodplain land purchase and subsequent side-channel habitat improvement been included? It would be a powerful yet costly mitigation tool.

Ken Barr: We have not looked at the real estate purchase for mitigation, but we can look into this.

Jon Duyvejonck: Do the Costs displayed in this table include administration and maintenance costs?

Scott Whitney: Most of the Habitat projects have this cost rolled up, as do the water level management, and fish passage values. In most cases it is set around 10% of the project cost. In the future we will likely break it out as a separate line item.

Bill Bertrand: The \$40 M proposed for the fish passage facility at Dam 19 may be better spent elsewhere.

Scott Whitney: Remember, this is an EXAMPLE, there are a multitude of different ways in which the mitigation dollars can be distributed. Fish passage is an important tool since it has the potential to benefit a large portion of the system rather than a specific sites or pools. Due to previous discussions by the NECC, Dam 19 was the only alternative for mitigation and being the biggest obstacle it is likely to be the most costly. Additional feasibility studies should help refine our cost estimate.

Ken Brummett: Will mitigation be appropriated to areas with higher impacts.

Scott Whitney: Yes. Referred back to spatial scale discussion and Table 2 in the Mitigation Strategy.

Steve Bartell: Do any of the states do follow up monitoring to evaluate success of stocking.

Ken Brummett: The only stocking we do is for lake sturgeon. MO does tag lake sturgeon that have been stocked.

Dan Wilcox: Any information of survivorship of stocked fish from time to stocking would be appreciated.

Bill Bertrand: State of IL does do stocking of walleye fingerling (no indication on monitoring). Illinois River was studied for sauger stocking. Should be some info available from that study.

Ken Barr: Fish mitigation accounts for 80% of the total mitigation costs with a total expenditure of \$80-90 Million for fish under Improvement Scenarios E thru J.

Ken Brummett: What is the range of fish lost? \$80M may seem like a lot, but if the fish losses are much higher than projected, then maybe it is not high. Again what is the range (bracket) of fish lost.

DAY 2 - January 12, 2000

8. Major Rehabilitation Costs – Kevin Landwehr

Kevin provided a summary of the cost of major rehabilitation of existing lock structures in response to questions raised during the previous days session on Rehab cost savings (**Attachment 3**).

Mark Beorkrem: How is this a cost savings since costs are still being incurred, why not use the same gate, instead of replacing it with a completely new one.

Kevin Landwehr: The Engineering Workgroup had not previously quantified a difference in the with and without project rehab schedule.

Dave Tipple: We are scheduling a rehab discussion with the Corps folks that work with this stuff daily, we could meet to discuss this topic in greater detail. Will try to coordinate for possible dates sometime in early February.

Gretchen Benjamin: Without project and with project rehab schedule

Ken Barr: Reiterated slide from his powerpoint presentation on rehab scheduling.

Kevin Landwehr: Timing varies from site to site, it is a function of when rehab was last done and when the next is projected to occur.

9. Bank Erosion Study – Scott Estergard

Provided a review of how the bank erosion study was conducted and results compiled, this information was provided in the Oct. 1999 Summary Package. The following resource were identified as significant and will be evaluated further to mitigate for impacts, once identified. They include the following:

Significant Species - one eagle nest and two heron rookeries on the Miss. and two locations with protected plant species on the IWW. Total of approximately 5,000 ft. of shoreline.

Floodplain Forest - Comprised of upland hard mast tree species. Mesic forest projected loss considered not significant. Areas selected for mitigation were based on spatial analysis of 1989 LTRMP LC/LU and erosion areas. This exercise resulted in the identification of 8,217 ft. on the Miss. and 233 ft. on the IWW. This represents approximately 3% of this habitat type on the Miss and 0.1% on the IWW.

Islands – islands are viewed as an important resource regardless of land cover or other resources present since they provide habitat diversity. Erosion of island head not only creates a loss if terrestrial habitat but those sediments may move into backwaters. Islands identified as eroding or dissecting were identified. A total of 105,521 feet on the Miss. and 18,301 ft. in the IWW were identified.

Social Resources - damage to public and/or private property will be evaluated for impact and significance. Estimates indicate that up to 2,000 ft. may require protection.

Historic Properties - Archeological survey needs were based on assumptions that 10% of the erosion areas have already been surveyed, and 10% of the erosion areas have been adequately protected. In addition, the remaining area not likely to require investigations due to low archeological potential comprised approximately 50 % of the

Miss. and 25% of the IWW. To date there are 35 sites on the Miss and 85 sites on the IWW that are located adjacent to bank erosion areas and will require an evaluation.

Two basic measures or alternatives were identified to protect the aforementioned resources. The included placement of rock rip-rap and alteration of speed and sailing line of tows.

Jon Duyvejonck: Difference between floodplain forest and mesic forest?

Scott Estergard: Floodplain Forest consists primarily of upland hardwoods. Mesic forest consists of cottonwood and maple. Basically following the same definition provided in the 1989 LTRMP LC/LU.

Rick Moore: The Mississippi River is already a highly manipulated system, is it a matter of cost why we are not considering the option of moving the sailing line? The Corps put the structures there, and should be willing to move them. I don't like the idea of dumping piles of rock on the shore to protect shoreline.

Ken Barr: We have no intention of dumping rock along hundreds of mile of shoreline. It was made clear in previous NECC meetings that we need to allow some shorelines to erode and trees to fall into the water since they are natural processes and create habitat. The areas where moving the sailing line is needed are often very restricted or narrow already, and as such do not offer much in the way of moving the sailing line. Areas that would be prioritized for protection would include areas with historic properties or important ecological resources (i.e. rookeries, eagle roosts, adjacent spawning areas).

Kevin Landwehr: Mooring locations and fleeting areas are "areas of concern", and were identified as high potential for tow induced bank erosion.

Ken Barr: Most of the areas we are talking about are fleeting areas, right?

Kevin Landwehr: About a third of the high risk areas were fleeting areas.

Tom Pullen: Wherever we can design mitigation measure to blend in with the river should be viewed as favorable to large rockpiles.

Dan Wilcox: Example of bendway weirs under water, current use of wing dams and channel training structures are all under water and do not disrupt the scenic beauty of the area.

Rick Moore: I would like to see less traffic as an alternative.

Jon Duyvejonck: WRDA calls for the protection of bottomland hardwoods of which mesic forests would fall under, concerned about your statement of no significance for mesic forests.

Ken Barr: We are only proposing to protect 3% of mesic forest that is not protected by other measures. Using 10 ft height intervals Kevin has generated an estimate of habitat loss in the October Summary package

Al Fenedict: There are many other ways to protect these areas without using rock rip rap.

Gretchen Benjamin: What is a offshore revetment?

Dan Wilcox: Essentially it is a linear island that runs parallel to the shoreline protecting the existing shore from wave erosion while at the same time creating a protected water area behind it for fishery benefits. Many become vegetated and give the appearance of natural islands after several years.

Ken Brummett: The distance offshore will have an effect on the total cost since the base width has to increase with depth.

Jon Duyvejonck: I would like to see a micromodel to evaluate innovative configurations to achieve a variety of habitat types.

Ken Brummett: The scale of the micromodels do not allow this small scale modeling.

Ken Barr: referred to workshop Kevin has proposed to hold to discuss these types of measures in greater detail.

Jon Duyvejonck: How much erosion is being observed under the baseline condition or how many sites

Ken Barr: Our panel of experts took the "Huck Finn" trip to identify and rate erosive areas. They were primarily concerned with the length of eroded shoreline, did not compute area. Since, there is a multitude of erosive actions, it is difficult to tease out those that are specifically attributable to traffic. 14% of the areas identified in the Upper Miss. were classified as areas of traffic induced erosion. The number of sites remains the same from the baseline traffic to the incremental, it is the level of magnitude that is impacted with additional traffic.

Kevin Landwehr: Actually, the location of sites is common between alternatives, not between the with and without. Not all of the sites fall in areas identified as high erosion, although 95% of the sites fall in eroding (severe, moderate, and minor) or protected areas. Some small distance was along areas identified as stable in the field survey, including areas along fleeting areas.

Ken Brummett: Do you have revised numbers as to the number of additional fleeting areas?

Ken Barr: A new report looked at capacity of current fleeting areas and projected where new areas are likely to occur. Essentially the increased efficiency should result in decreased need for such areas in the near term.

Rick Moore: What about barge loading areas where fleeting occurs?

Ken Barr: An analysis of terminal capacity is ongoing.

Mark Beorkem: There are no official barge fleeting areas for terminals they essentially leave them wherever they want.

Tom Pullen: Who regulates or licenses fleeting areas?

Bernie Schonhoff: Most states issue permits for fleeting, however this varies from one state to the next, Illinois do not issue permits while Wisconsin and Iowa do. MO? and MN ?in Iowa they have to have specific permits, Illinois does not

Tom Pullen: Maybe we need to advocate a comprehensive approach to attacking this problem.

10. SUBMERSED AQUATIC PLANTS – Dan Wilcox

Provided a review of modeling results based on NAVEFF model outputs. NAVEFF was used to identify areas of wake wave sediment resuspension likely to cause increased turbidity and decreased light penetration. Plant growth models were used to estimate the effects of vessel-induced sediment resuspension on plant growth and reproduction. We Used a 5% annual reduction in total biomass as a significance threshold, approximately the minimum amount that you might be able to measure in the field. We estimated Relatively small impact on submersed aquatic plants and limited number of locations. No effect on plant propagule production was predicted by the model, so interannual effects on plant populations should not be significant. We identified areas of impact within Pools 9, 10, 11, and 13. We are Still waiting for information on Pool 19 (Rick Anderson, Southern Illinois University will provide maps on the recent extent of SAV beds there). Cells in the LTMRP trend pools are ½ mile long while those in non-trend pools are one mile long. We assumed approximately 1/3 of the cell lengths to estimate the amount of protective measures needed for mitigation. Additional areas in need of protection may be identified when we complete analysis of the potential for physical damage from vessel-induced wake waves and currents.

Mitigation alternatives include structural measures, such as offshore revetments and islands, designed to reduce suspended sediments in shallow channel border areas where plants can grow. Management alternatives could include summer drawdowns. Moving the sailing line and speed reduction of passing tows are also potential alternatives.

Ken Brummett: Where did you come up with the 1/3?

Dan Wilcox: We estimated that the entire length of the cells identified as potential impact areas would not be affected, and used an assumption of 1/3 of their length to estimate the amount of protection needed. We will need to visit each site to determine the amount and type of appropriate mitigation measures.

Ken Brummett: Caution, that what you expect and what you get from a drawdown may not be the same.

Dan Wilcox: The drawdown method has proved to be effective for re-establishing aquatic plants both on the Upper Mississippi River System and elsewhere in the region. The ecological effectiveness of a pool-scale drawdown will be dependent on the hydrologic conditions, the duration, seasonal timing, and weather during the drawdown.

Gretchen Benjamin: We need the full compliment of vegetative components (diversity of species, both submersed and emergent plants) since these diverse beds act in concert by providing a buffer for the other vegetation.

Ken Barr: Submersed aquatic plants in turbid areas would likely die from insufficient light penetration once water was put back on.

Dan Wilcox: Growing season drawdowns kill most SAV in the drawdown zone, but allow re-establishment of SAV outside the immediate drawdown zone. These plans can persist following the drawdown, depending on the ambient turbidity. Consolidation and oxidation of bottom sediment allow for good growing conditions and recolonization of SAV in the drawdown zone following the drawdown.

Gretchen Benjamin: Hinge point control creates a problem in the upper pools. Dam point control would be better.

Ken Barr: There are a variety of concerns as to the feasibility of drawdown in other Pools.

Dan Wilcox: We have examined the feasibility of drawdown in the St. Paul District pools. The pools differ in the amount of built infrastructure that could be affected by a drawdown, and the amount of advance dredging that would be required.

BACKWATERS

HREP type projects could restore SAV habitat in shallow areas, however this method is very costly. Recommend trying other less costly measures, which may provide higher benefits. Survey areas of projected plant impacts and try to characterize these areas better to find out if plants actually occur there and what are the current suspended sediments.

Tom Pullen: Is it the consensus that moving the control point from hinge point to dam control would be the best measure to benefit SAV?

Ken Brummett: I think having a sliding (between mid-pool and dam) control throughout the year would be a better approach.

Gretchen Benjamin: I think it is best to address this issue on a pool by pool basis.

Dan Wilcox: I suggest a systemic approach to modifying the existing system of river regulation, to identify the needs and strategies for the different navigation pools. We could develop a long term schedule for funding and implementation of growing season drawdowns and other modifications to river regulation. We need a plan, and a flexible schedule.

Ken Brummett: I think a flexible schedule is important since river discharge in any one year may preclude conducting a successful drawdown.

Dan Wilcox: The primary objective of the summer drawdown is to try to simulate the natural, or unregulated, hydrologic regime, and encourage the re-establishment of aquatic plants. We are not proposing a system-wide modification of river regulation as mitigation for the effects of increased traffic for the Navigation Study. We can use summer drawdowns as a mitigation measure, targeted to areas where impacts to aquatic plants are predicted. The planned drawdowns of Pools 8 and 13 will provide important information which will help develop an appropriate and effective drawdown strategy.

Gretchen Benjamin: Referring to page 15 of Mitigation Package paragraph on emergent plants. It indicates that incremental tow increase will not significantly effect the emergent plants. The locks and dams have already destroyed what emergents where there and it has had a significant impact. On page 16 referring to submersed plants, why did Pool 12 drop out of the impacted areas?

Dan Wilcox: Impoundment of the navigation system greatly increased the extent of emergent aquatic plants on the UMRS. In recent decades since impoundment, the abundance of emergent plants has declined, primarily due to river regulation maintaining a minimum pool level. Apparently, the distance from the sailing line and near-shore sediment types resulted in no areas identified in Pool 12 where >5% reduction in plant biomass was predicted.

Gretchen Benjamin: Two species were modeled, what are we doing for the other species of plants? The more diversity the better. Do we magnify the impact by a factor to get at the overall impact and mitigation.

Steve Bartell: A better way to look at it is that where we predict decreased plant growth, it is for all SAV species.

Dan Wilcox: We selected wild celery and sago pondweed to represent the SAV plant community, because they are widely distributed, ecologically important species with different growth forms. We can use LTRMP SAV monitoring results to examine the degree to which the other SAV species occur in conjunction with wild celery and sago in Pools 4, 8, and 13.

Jon Duyvejonck: I think we need to conduct some field verification.

Gretchen Benjamin: I would like to see more opening up of the floodplain microhabitats. The current mitigation packaged does not list this as a viable option. I would not consider plantings as a necessary alternative since a seed bank still exists in many of these areas, once the problem is corrected the plants will come back.

Jon Duyvejonck: I think this idea of the seed bank would have to be evaluated on a pool by pool basis. For example, in Pool 16 our studies have indicated the seed source and seed bank have been lost, therefore they might need a jump-start in the way of plantings.

11. SUMMATION - Ken Barr

Ken updated the group on upcoming meetings and important dates:

January 21, 2000 - Rock Island District will provide a roll-up of the investment schedule for environmental costs to Rich Manguno, economic work group. This will be incorporated into the NED plan.

~~February 15, 2000~~ (Note this meeting has been postponed): - Governor's Liaison Committee (GLC) meeting from 9:00 A.M. to 4:00 P.M. at the Doubletree in Twin Cities. The Corps will be presenting the preliminary NED plan and detailing the environmental costs.

July 2000 - DRAFT EIS will be out for public review.

July-August 2000 Public Meetings to provide statements on the DRAFT EIS, Public involvement

Jon Duyvejonck: What about the other reports we have heard mentioned in the past two days as "soon-to-be completed" when will these be out in their final form? How can we get a preliminary NED plan when you are still awaiting final impacts and get at mitigation costs.

Ken Barr: We are dealing with a reasonable approach, much of the information is available to assist in alternative evaluation. In a typical study, none of this would be available until it was released as a DRAFT to the public.

Rick Moore: We have not had much to show our constituents or the public on this topic and having a 45 day review is insufficient we will strongly oppose this approach.

NOTE: Request by NGO participants that they also receive any read-ahead materials: American Rivers, Sierra Club, Isaac Walton League, Audubon Society, and Nature Conservancy.

RANDOM COMMENTS

Ken Barr: Clarifications based on comments made at this meeting:

- Operations and Administrative will be split out as separate line items in the mitigation spreadsheet.
- Special concern Fish species, Lake Sturgeon and Paddlefish, will be part of any mitigation proposal.
- Water level control considerations will be evaluated further.
- Main channel adult fish entrainment methods will be further evaluated during the 2000 field season.

Rick Nelson: We need to have further discussion on how the coordination for adaptive mitigation approach will be carried forward.

Ken Barr: I anticipate this will be an important topic for the upcoming GLC.

Jon Duyvejonck: The Corps should review the Coordination report for the second 1200' lock at the Melvin Price Lock and Dam which outlined a coordination framework. Essentially the plan called for a 5-year basis for assessment by a body consisting of five states, corps (St. Louis) and USFWS (Rock Island)

Rick Nelson: How do we insure this mitigation plan will be carried out over the next fifty year? We need to have in place assurances and considerations. We (USFWS) would still prefer that a trust fund be set up-front.

Dan Wilcox: There are number of options from an administrative standpoint in how this could be carried out.

Rick Nelson: When would the CG funds dry up?

Ken Barr: Under ASAP, it would be complete by 2013 under optimized could be 2025, first cost of construction includes mitigation and could carry on indefinitely.

Steve Bartell: Would the Great Lakes Protection Fund (GLPF) be a viable example of how to fund mitigation?

Rick Moore: Described the GLPF. States annually contribute X dollars to a fund and meet annually to evaluated proposed research projects. The down side is that appropriations are competitive and based on merit. This evaluation procedure is tied up in the annual budget cycle which could limit its' usefulness.

Gretchen Benjamin: Expressed concerns about the float in technology and associated environmental impacts.

Ken Barr: Overall this technology is more environmental friendly and cost effective. The Site-Specific Report estimated an adjacent terrestrial area of 5-8 acres would be required for the construction projects. The details of the where and how these float in cells will be fabricated is yet to be determined.

NEW BUSINESS

Ken Barr: We (Corps) will continue to work directly with the states and USFWS representatives regarding the PED (Preliminary Engineering and Design) and site specific studies. NEPA tiering is key to accomplishing this.

12. FINAL THOUGHTS

Bernie Schonhoff: The Corps put in the dams that trapped sediment. I am concerned that the mitigation measures that we are considering do not address moving this sediment again.

Ken Barr: We are trying not to add to it (sediment) but are not specifically addressing dam impacts on sedimentation.

Dan Wilcox: The cumulative effects study is an attempt to identify where these changes have occurred and are likely to occur in the future.

Bernie Schonhoff: We fixed the river in its current position and it is no longer allowed to meander within its flood plain and therefore, can not diffuse it's energy by moving sediments from backwaters or side channels (scour).

Dan Wilcox: Geomorphologically, the river was historically stable in the upper portions of the Mississippi River, some islands have remained intact for thousands of years. Overall, we have seen a much smaller scale of channel morphology change than the lower Miss. River or the Missouri River. We have changed the hydrodynamics of the system.

Bernie Schonhoff: Adaptive mitigation, I was thinking of an ecosystem approach, what I am seeing is a piecemeal approach of measures, would like to see more of the large scale projects like buying out floodplain levee districts. Stocking fish or plantings are not viewed as real answers they are quick fixes, don't want to take them out completely, want to see the focus back towards looking at natural processes allowing projects to be reversible.

Tom Pullen: What we really need is to have a good idea of what we want the river to be. We need that vision first.

Bernie Schonhoff: I think it is easier to identify what it is we don't want the river to be. Referred to photo of landscaped European River.

Ken Brummett: With the mitigation measures, we need to be careful in selecting those projects (locations) that are most likely to succeed in providing the desired benefit. I also agree that we should focus on natural processes and get away from the rock approach. The Cumulative Impacts report is primarily a planform exercise and does not really tell us what has occurred, especially since we lack the bathymetry. Variability in the information and model estimates, we need to see the bounds on these estimates. Appreciate the willingness of the Corps to come down and talk to our people regarding the Nav Study.

Gretchen Benjamin: Think an Avoid and Minimize strategy should include a lesser impact such as Alternative B. Strongly support the selection of Alternative B.

Al Fenedict: Not too sure that the mitigation proposed is going to be successful, need to carefully follow up and monitor, mitigation should be systemic, adaptive mitigation allows for innovative approaches, think big plans and thoughts seek new authorities to protect ecological authorities, goal of mitigation is to get a greater return than what was lost to ensure stability, cost of mitigation should be a cost of the project instead of a separate component, NED plan when formulated should allow flexible language that says the corps will reevaluate whether the improvements are actually needed, formal request that the EIS review be extended to 60 days.

Jon Duvejonck: still lack the credibility of the results until we have adequate field verification, therefore we cannot buy into the dollar values. It is impossible to separate the O&M problems with the Navigation Project as is being currently proposed. Don't support a 40 million dollar fish passage without seeing a demonstration that will indicate it's

success. Get authority to change water level regulation under the Nav study we support. We support the adaptive approach to mitigation, how this is actually carried out is still a concern

Rick Nelson: The mitigation approach we have seen so far does not go far enough. It is a good start, however I would like to reiterate that we would like to see something that addresses the whole picture and not just the incremental increase. Still concerned of how we are really make the mitigation happen and actually get the funding. Reiterated the 2nd lock issue (Melvin Price, L&D 26) where the Corps used a faulty economic analysis showing justification, then the traffic did not come as expected. Then change the rules in terms of how the mitigation for the 2nd lock will be done using current analysis showing less traffic than was used to justify the project. Don't want to see the same build now mitigate later scenario occurring with this project.

Ken Barr: Essentially the economic model being used today is much more conservative than the one used for the 2nd L&D 26. If we were using that one today, it is likely improved locks would be justified all the way up the river.

Tom Pullen: As I indicated previously, an actual analysis of traffic was done earlier that indicated no increase since the 2nd Lock was built, so no mitigation for incremental impacts of traffic increases has come due. As I understand it, St. Louis is revisiting this subject now as well as using the new economic models to project future traffic increases. In the 2nd Lock Record of Decision, the Corps agreed to:

- a. Develop a Plan of Study to address incremental traffic increases. (Done, but studies not fully implemented)
- b. Implement an "Avoid and Minimize" program. (Done)
- c. Serve as a proponent for other "Avoid and Minimize" measures implementable by other government authorities or private industry. (Done)
- d. Carry out monitoring and other measures to address *Lampsilis higginsii* issues. (Work is ongoing to do this)
- e. Mitigate site specific impacts of constructing the 2nd Lock. (Done)

Al Fenedict: There is no way to separate the economic and ecological costs.

Lori Walters: If locks are extended and the boats don't come as predicted, does that mean the mitigation might not happen?

Ken Barr: Under and adaptive approach, that is possible. However, many of the avoid minimize and mitigation measures will be implemented prior to the completion of the proposed lock improvements,

Al Fenedict: Under the current direction, mitigation would be occurring at the same time or parallel to construction. I would like to reiterate my comment of making this a part of the overall plan and dropping the term mitigation altogether.

Rick Moore (Issaac Walton League): Displeased with how this project has been approached, all of this balance between the two conflicting uses of the system is mythical you (Corps) are serving the needs of the navigation industry and coming in behind and trying to clean up the mess to the environment. Critical that the public review of the EIS be extended as long as possible to allow the public to fully comprehend the full nature (objectives and impacts) of this project.

Jeff Stein (American Rivers): Concerned over the deadlines and not allowing ample time to compile the information and make informed decisions. I have heard two facets of adaptive mitigation approach: (1) adaptively selecting from a number of measures and (2) adaptive planning process. I agree with approach 1, but am concerned that approach 2 is not appropriate. Still see many unanswered questions in terms of the resources that we are trying to mitigate for and projecting impacts on. Have not seen a lot of information on the potential for success of the proposed mitigation measures will they really provide a predictable positive benefit enough to offset the projected impacts.

Mark Beorkrem (Sierra Club/UMRBA): We are still very concerned that the predictions from the Faucett report are faulty. Believe it would be a mistake to rely on the increased tonnage of grain, especially since much of the land they are relying on for production is currently and likely to remain in CRP. Cumulative and systemic effects are really what needs to be addressed but the Corps has a different definition of what the project actually is and are only focused on the incremental increase. The Corps has developed a navigation leg and does not have a broad expanse planning network to evaluate the environmental consequences of their actions on an ecosystem approach, instead are still focused on the microhabitat concept. Need to bring the two sides together on an equal basis, look to the Chesapeake Bay and Everglades as possible examples. How can we keep this system as an ecologically viable ecosystem as we continue to expand the navigation side? Concerned about the amount of uncertainty the remains for many of the resources discussed during the past two days.

Ken Brummett: We would like to see the range of possible impacts rather than a single number. Likewise the mitigation costs will also need to be summarized as a range.

Steve Bartell: We have and will continue to identify the uncertainties associated with the model results. We will provide the bracketing for the numbers you have seen in the past two days. We have generated many of these numbers already, they were not carried through into the tables presented at this meeting.

Bernie Schonhoff: Will the uncertainty and bracketing be carried through into the final draft?

Ken Barr: Yes, that is why we have used a risk based approach in our assessment of impacts

Dave Tipple: Many of the plans or proposals you have seen presented in this forum will remain tentative until we hit Dec 2000 when the final report goes to Congress. Obviously we all have a lot of work to do between now and then. Appreciate the input from the NECC. This morning Brad Thompson checked the Grain Volume on some of the issues

regarding the Faucett report (Commodities Forecast) that were raised yesterday. I would like to clarify some of those points. The available agricultural land estimates of 20,000,000 acres that American Rivers referenced on January 11 is a nationwide estimate (from 208M acres in 1994 to 229M acres in 2050). In the Midwest, the number is around 7M acres (from 69M to 76M acres between 1994 and 2050). The increased tonnage of grain projected for the future is expected to come primarily from an increase in yield/acre and not on bringing CRP land back into production.

Tom Pullen: This has been an interesting meeting with constructive comments and an open expression of opinions that is healthy for this project. We also feel the frustration on some of the matters in terms of what we desire and what we are authorized to do for this study. A comprehensive addressing of the system was desired but the marching orders did not allow this approach. Again we appreciate the candor of this group.

Ken Barr: we will do our best to capture the nature and intent of the comments made at this meeting and carry them forward to headquarters and others involved in this project.

13. Next Meeting

The next meeting was scheduled for April 4, 2000.